

WHAT IS CLAIMED IS:

1. A system for frame accurate insertion of a media segment into a broadcast signal,

comprising:

a central insertion control unit, capable of inserting the media segment into a broadcast signal, inserts a control signal and an information signal into the broadcast signal, the central insertion control unit being coupled to a central source broadcast equipment; and

a remote insertion control unit that controls the insertion of the media segment based on the control signal received from the central insertion control unit, the remote insertion control unit being coupled to rebroadcasting equipment of a remote receiver, the remote receiver detects the control signals and information signals in a received broadcast signal and broadcasting the media segment in response to the control signal; wherein the control signal comprises:  
a cue signal that transfers information about media segments; and,  
an action signal that triggers an insertion of the media segment.

2. The system of claim 1 wherein the central insertion control unit inserts the control signal into spare data capacity of the broadcast signal.

3. The system of claim 2 wherein the action signal references time.

4. The system of claim 2, the control signals further comprising:

a security code identifying the channel to be used by the broadcast signal.

5. The system of claim 4, the control signals further comprising:

a package identifier used to identify the proper receipt of the control signal by the remote insertion control unit.

- 1 6. The system of claim 5, the control signals further comprising:  
2 an encryption key used to decipher the media segments.
- 1 7. The system of claim 5 wherein the central insertion control unit comprises:  
2 storage media for storing control information as well as media segment information and  
3 logging information;  
4 a processor for controlling and monitoring the insertion and being coupled to the storage  
5 media;  
6 an encoder for encoding control signals and information signals into a broadcast signal,  
7 the encoder being coupled to the processor; and  
8 a data communications unit for external communication and serial interface for  
9 connection to external devices, the data communications unit and the serial  
10 interface being coupled to the processor.
- 1 8. A system of claim 7 further comprising:  
2 a first remote control unit coupled to the central insertion control unit for remotely  
3 controlling and communicating with the central insertion control unit;  
4 a second remote control unit coupled to the remote insertion control unit for remotely  
5 controlling and communicating with the remote insertion control unit; wherein  
6 communication with the first remote control unit and the central insertion control  
7 unit is devised to be performable by telecommunications lines.
- 1 9. The system of claim 5 wherein the remote insertion control unit comprises:  
2 a processor;  
3 storage media for storing media segment and being coupled to the processor;

4 a player for playing stored media segment and being coupled to the processor and the  
5 storage media;  
6 a broadcast signal switch for switching between broadcasting received broadcast signals  
7 and media segment being played by the player, the media segment being input into  
8 the switch as broadcast signals;  
9 an insertion control unit being coupled to and devised for controlling the switch, the  
10 insertion control unit having an input for receiving the video signal portion of a  
11 broadcast video signal, from which a control signal is extractable;  
12 a computer interface being connectable to the processor;  
13 a data broadcast transceiver being coupled to the computer interface, and  
14 an audio-video changeover for switching from a received broadcast signal output to an  
15 insertion signal output from the player, the audio-video changeover being coupled  
16 to the computer interface.

1 10. The system of claim 9 further comprising:

2 a first remote control unit coupled to the central insertion control unit for remotely  
3 controlling and communicating with the central insertion control unit;  
4 a second remote control unit coupled to the remote insertion control unit for remotely  
5 controlling and communicating with the remote control unit; wherein  
6 communication with the first and second remote control units and the insertion  
7 control units is performed by telecommunications lines.

1 11. The system of claim 10 wherein the action signal triggers an insertion of the media  
2 segment based on the content of the media segment.

- 1 12. The system of claim 10 wherein the action signal triggers an insertion of the media  
2 segment based on the context of the media segment.
- 1 13. The system of claim 5 wherein the context of the media segment is conveyed to the  
2 remote insertion control unit via a feedback channel from an end receiver of the broadcast  
3 channel.
- 1 14. The system of claim 10, wherein the action signal triggers an insertion of the media  
2 segment based in response to central playing schedule information.
- 1 15. The system of claim 14, wherein the remote insertion control unit is coupled to remote  
2 storage media for storing media segments, play lists, log files and status information.
- 1 16. The system of claim 15, wherein the central insertion control unit, and a remote insertion  
2 control unit are connectable into a network by the telecommunications lines.
- 1 17. The system of claim 15, wherein the central insertion control unit, the remote insertion  
2 control unit and a separately located compression/decompression unit for  
3 compressing/decompressing information are connectable into a network by the  
4 telecommunications lines.
- 1 18. The system of claim 17, wherein the control signal encoder is encoded into a Teletext  
2 compatible format.
- 1 19. The system of claim 18, wherein the control signal encoder is encoded into a Teletext  
2 compatible format transparent to a standard Teletext receiver.
- 1 20. The system of claim 18, wherein the control signal encoder is encoded into a Hamming  
2 coded format
- 1 21. The system of claim 17 wherein the broadcast signal is a radio signal.
- 1 22. The system of claim 21 wherein the radio signal is digital.

- 1 23. The system of claim 17 wherein the broadcast signal is a television signal.
- 1 24. The system of claim 23 wherein the spare capacity of the broadcast signal is a vertical  
2 blanking interval.
- 1 25. The system of claim 23 wherein the broadcast signal is a high definition television signal.
- 1 26. An central insertion control apparatus for frame accurate insertion of a media segment  
2 into a broadcast signal, comprising:  
3 storage media for storing control information, media segment information, and logging  
4 information;  
5 a processor for controlling and monitoring the insertion and being coupled to the storage  
6 media;  
7 a data communications unit for external communication;  
8 a serial interface for connection to external devices, wherein the data communications  
9 unit and the serial interface are coupled to the processor; and,  
10 an encoder, coupled to the processor, for encoding control signals and information signals  
11 into a broadcast signal, the control signals comprising:  
12 a cue signal that transfers information about media segments; and,  
13 an action signal that triggers an insertion of the media segment.
- 1 27. The apparatus of claim 26 wherein the central insertion control unit inserts the control  
2 signal into spare data capacity of the broadcast signal.
- 1 28. The apparatus of claim 27 wherein the action signal references time.
- 1 29. The apparatus of claim 27, the control signals further comprising:  
2 a security code identifying the channel to be used by the broadcast signal.
- 1 30. The apparatus of claim 29, the control signals further comprising:

2 a package identifier used to identify the proper receipt of the control signal by a remote  
3 insertion control unit.

1 31. The apparatus of claim 30, the control signals further comprising:  
2 an encryption key used to decipher the media segments.

1 32. The apparatus of claim 30 wherein the action signal triggers an insertion of the media  
2 segment based on the content of the media segment.

1 33. The apparatus of claim 30 wherein the action signal triggers an insertion of the media  
2 segment based on the context of the media segment.

1 34. The apparatus of claim 33 wherein the context of the media segment is conveyed to the  
2 remote insertion control unit via a feedback channel from an end receiver of the broadcast  
3 channel.

1 35. The apparatus of claim 30, wherein the action signal triggers an insertion of the media  
2 segment based in response to central playing schedule information.

1 36. The apparatus of claim 30, wherein the encoder is a Teletext encoder for encoding the  
2 control signal into a Teletext compatible format.

1 37. The apparatus of claim 36, wherein the Teletext encoder encodes the control signal into a  
2 Teletext compatible format transparent to a standard Teletext receiver.

1 38. The apparatus of claim 30, wherein the control signals further comprise a cue signal for  
2 transferring information about play lists and an action signal for triggering an insertion of  
3 a predefined segment of a media segment.

1 39. The apparatus of claim 38, wherein the control signals are coded a Hamming coded  
2 format.

1 40. The apparatus of claim 39, wherein the spare data capacity is a vertical blanking interval.

- 1 41. The apparatus of claim 30, further comprising:  
2 a data communications unit for external communication; and  
3 a serial interface for connection to external devices, wherein the data communications  
4 unit and the serial interface are coupled to the processor.
- 1 42. The apparatus of claim 30, characterized by transferring control signals in the form of  
2 controlling commands from the central insertion control apparatus through a  
3 telecommunications line.
- 1 43. The apparatus of claim 42, wherein the telecommunications line is a very small aperture  
2 terminal line.
- 1 44. The apparatus of claim 42, wherein the telecommunications line is an integrated services  
2 digital network line.
- 1 45. The apparatus of claim 42, wherein the telecommunications line is a telephone or modem  
2 line.
- 1 46. An remote insertion control apparatus for frame accurate insertion of a media segment  
2 into a broadcast signal comprising:  
3 a processor;  
4 storage media for storing media segment and being coupled to the processor;  
5 a player for playing stored media segment and being coupled to the processor and the  
6 storage media;  
7 a broadcast signal switch for switching between broadcasting received broadcast signals  
8 and media segments being played by the player, the media segment being input  
9 into the broadcast signal switch as broadcast signals; and

an insertion control unit for controlling the broadcast signal switch, the insertion control unit having an input for receiving the video signal portion of a broadcast video signal, from which a control signal is extractable; wherein the control signal comprises:  
a cue signal that transfers information about media segments; and,  
an action signal that triggers an insertion of the media segment.

47. The apparatus of claim 46 wherein the central insertion control unit inserts the control signal into spare data capacity of the broadcast signal.

48. The apparatus of claim 47 wherein the action signal references time.

49. The apparatus of claim 47, the control signals further comprising:  
a security code identifying the channel to be used by the broadcast signal.

50. The apparatus of claim 49, the control signals further comprising:  
a package identifier used to identify the proper receipt of the control signal by a remote insertion control unit.

51. The apparatus of claim 50, the control signals further comprising:  
an encryption key used to decipher the media segments.

52. The apparatus of claim 50 wherein the action signal triggers an insertion of the media segment based on the content of the media segment.

53. The apparatus of claim 50 wherein the action signal triggers an insertion of the media segment based on the context of the media segment.

54. The apparatus of claim 53 wherein the context of the media segment is conveyed to the remote insertion control unit via a feedback channel from an end receiver of the broadcast ~~channel~~.



- 1 55. The apparatus of claim 50, wherein the action signal triggers an insertion of the media  
2 segment based in response to central playing schedule information.
- 1 56. The apparatus of claim 50, wherein the encoder is a Teletext encoder for encoding the  
2 control signal into a Teletext compatible format.
- 1 57. The apparatus of claim 56, wherein the Teletext encoder encodes the control signal into a  
2 Teletext compatible format transparent to a standard Teletext receiver.
- 1 58. The apparatus of claim 50, wherein the control signals further comprise a cue signal for  
2 transferring information about play lists and an action signal for triggering an insertion of  
3 a predefined segment of a media segment.
- 1 59. The apparatus of claim 58, wherein the control signals are coded a Hamming coded  
2 format.
- 1 60. The apparatus of claim 59, wherein the spare data capacity is a vertical blanking interval.
- 1 61. The apparatus of claim 50, wherein the insertion control unit comprises:  
2 a computer interface being connectable to the processor;  
3 a data broadcast transceiver being coupled to the computer interface; and  
4 an audio/video changeover for switching from a received broadcast signal output to an  
5 insertion signal output from the player, the changeover being coupled to the  
6 computer interface.
- 1 62. The apparatus of claim 61, further comprising:  
2 genlocking circuits having an input for receiving a broadcast video signal and being  
3 coupled to the player for genlocking its output signal to the received video signal.

- 1 63. A method for frame accurate insertion of a media segment into a broadcast signal being  
2 broadcast from a central source and received by a remote receiver adapted for  
3 rebroadcasting the broadcast signals to a number of end user units, comprising:  
4 encoding control signals and information signals into a broadcast signal, wherein the  
5 control signals are comprised of a cue signal that transfers information about  
6 media segments and, an action signal that triggers an insertion of the media  
7 segment; and  
8 inserting the control signals into spare data capacity of the broadcast signal.
- 1 64. The method of claim 63 wherein the action signal references time.
- 1 65. The method of claim 63, wherein the control signals further comprise:  
2 a security code identifying the channel to be used by the broadcast signal.
- 1 66. The method of claim 65, wherein the control signals further comprise:  
2 a package identifier used to identify the proper receipt of the control signal by a remote  
3 insertion control unit.
- 1 67. The method of claim 66, wherein the control signals further comprise:  
2 an encryption key used to decipher the media segments.
- 1 68. The method of claim 66, wherein the action signal triggers the insertion of the media  
2 segment based on the content of the media segment.
- 1 69. The method of claim 66 wherein the action signal triggers the insertion of the media  
2 segment based on the context of the media segment.
- 1 70. The method of claim 69 wherein the context of the media segment is conveyed to the  
2 remote insertion control unit via a feedback channel from an end user units of the  
3 broadcast channel.

- 1 71. The method of claim 66, wherein the action signal triggers an insertion of the media  
2 segment based in response to central playing schedule information.
- 1 72. The method of claim 66, wherein the encoder is a Teletext encoder for encoding the  
2 control signal into a Teletext compatible format.
- 1 73. The method of claim 72, wherein the Teletext encoder encodes the control signal into a  
2 Teletext compatible format transparent to a standard Teletext receiver.
- 1 74. The method of claim 66, wherein the control signals further comprise a cue signal for  
2 transferring information about play lists and an action signal for triggering an insertion of  
3 a predefined segment of a media segment.
- 1 75. The method of claim 74, wherein the control signals are coded a Hamming coded format.
- 1 76. The apparatus of claim 75, wherein the spare data capacity is a vertical blanking interval.
- 1 77. The method for insertion of a media segment into a broadcast signal as recited in claim  
2 76, comprising the further step of  
3 allocating different vertical blanking interval lines to different broadcast channels.
- 1 78. The method for insertion of a media segment into a broadcast signal as recited in claim  
2 76, comprising the further step of:  
3 transferring the control signals in the form of controlling commands from the insertion  
4 control apparatus through a telecommunications line.
- 1 79. A method for insertion of a media segment into a broadcast signal as recited in claim 76,  
2 further comprising the step of:  
3 selecting a line of the vertical blanking interval for the insertion of the control signals.
- 1 80. The method for insertion of a media segment into a broadcast signal as recited in claim  
2 79, comprising the further steps of:

3 ~~producing or compiling media segment,~~  
4 defining a scheduled slot in the broadcast signal, the scheduled slot that can be allocated  
5 for insertion of a segment or a block of segments of a media segment;  
6 transferring the additional media segment to and storing it in the remote receiver;  
7 notifying a central broadcast station that the additional media segment has been stored in  
8 the remote receiver;  
9 centrally planning and controlling the insertion of each media segment by the central  
10 control unit;  
11 encoding the cue in signal into the broadcast signal;  
12 broadcasting the television signal comprising the cue in signal to the remote receivers;  
13 inserting, at the remote receiver, in response to the encoded cue in signal, the stored  
14 additional media segment in the defined scheduled slot;  
15 broadcasting the media segment to broadcast consumers;  
16 rebroadcasting the television signal to broadcast consumers;  
17 communicating possible operating errors and/or logging information from remote  
18 receiver to central broadcast station or a monitoring center.